

genus were reared. A number of the parasite, *Ormyrus minutus*, were also reared.

Neuroterus vesicula Bass. When the larva of this species is full grown the gall is a thin shell, globular in form, almost black in color, covered with light spots, does not exceed three mm.

in diameter and is supported by the bud scales of *Q. bicolor* and *Q. macrocarpa*. Galls taken April 29 gave flies May 3.

Neither guests nor parasite were reared.

(To be continued.)

NOTES ON THE PARASITE OF THE SPOTTED LADY-BEETLE (*MEGILLA MACULATA*).¹

BY CLARENCE MOORES WEED AND CHARLES A. HART.

Our attention was first called to this subject during the summer of 1884 when dead examples of the common spotted lady-beetle (*Megilla maculata*) were found by Mr. Hart on various plants, each having beneath or beside it a compact brown cocoon, about 4 mm. long by 2 mm. wide. The matter was not especially studied at that time, and no further attention was paid to it until 17 July 1885, when several examples of the same kind were found in a corn-field. The lady-beetles were in two cases dead, while in three or four others

they were alive and embracing the cocoon with their legs. One of the cocoons attached to a dead beetle had a cap removed from one end, the parasite having doubtless escaped through the opening thus made. The other cocoons were placed in a breeding cage, and the imagoes were bred from them.

A living specimen of the same lady-beetle was again found 5 August 1885 on corn, at the base of a leaf, with a cocoon of its parasite entangled in its legs. It was retained alive for examination and acted much as a spider does about its egg-sack. When found, its hind claws were caught in the loose silk of the cocoon, but when the cocoon was removed the lady-beetle seemed greatly disturbed, and would fold its legs about anything within reach. It walked holding its body high in the air, and when it came in the vicinity of the cocoon, its claws would become entangled so that it dragged the cocoon along after it. When placed upon its back it waved its feet

¹ The present paper is mainly an abridgement of a more elaborate one prepared for the Cleveland (1888) meeting of the Entomological club of the American association for the advancement of science (the title of which was sent to the secretary) but as I was unable to reach Cleveland before the club adjourned it was not read. Since the meeting, however, an article covering the main grounds of our paper has been published in *Insect life* (Oct. 1888, v. 1, p. 101-104) by Dr. Riley, but it has been thought worth while to present these additional observations upon the presence and habits of the parasite and its host in Illinois, where all the observations here recorded were made, as a part of the work of the Illinois State laboratory of natural history.

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excitedly as most insects do when in this position; but as soon as the cocoon was placed within reach, it folded its legs about it and became quiet, remaining so although still lying on its back.

Early in May 1886, another *Megilla* was found over a cocoon on a clover leaf, and was transferred to a breeding cage. When next examined, 26 May, the parasite had emerged and the beetle was dead, although still entangled in the cocoon.

Again 18 May 1886 another *Megilla* was found on a currant leaf clinging to a cocoon like those above mentioned. It strongly resisted efforts to dislodge it, and refused to walk when removed—clinging to the leaf-stem or other small object as it had done to the cocoon. No sign of external injury could be seen. When put in alcohol the beetle refused to let go the cocoon until dying.

The same kind of beetle and cocoon were again found by a member of the Natural history society of the University of Illinois at a field-meeting in May 1887, in the woods near Mahomet, in central Illinois, and was shown to most of the members present. The *Megilla* was alive and clung to the cocoon with great pertinacity.

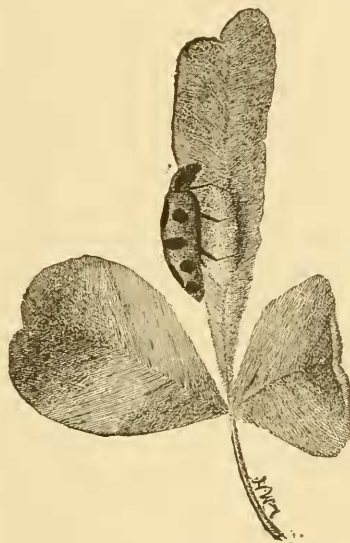
The accompanying illustration, drawn by Miss Lillie Hart, shows the beetle over the cocoon, on a clover leaf.

DESCRIPTION.

The parasite bred by us agrees with the figure given by Dr. Riley of the species bred by him from this coccinellid, for which he has proposed the provis-

ional name *Centistes americana*. He had obtained only female specimens, however, while both sexes are represented in the Laboratory collection. The two sexes may be described as follows:

Length, 2.5 mm. ♂ ♀. Black, somewhat shining, covered with rather long brown hairs; head with palpi and mandibles yellowish brown; black on vertex surrounding ocelli. Abdomen, except tergum of first segment, shining, dark



brown. Antennae as long as body, piceous except at base where they are tawny olive. Mesonotum coarsely punctate, with subtriangular areas adjacent to the insertion of the wings more shining and with fewer punctures; these areas sometimes brownish. Metanotum coarsely reticulate. Tergum of first abdominal segment longitudinally rugosely reticulate, remaining segments smooth and shining. Legs of ♀ dark yellowish

brown, with coxae blackish, and tarsi together with intermediate and posterior femora, obfuscate. Legs of ♂ lighter colored, with coxae unicolorous with legs; posterior tibiae at tip, and posterior tarsi dusky. Tegulae piceous. Wings subhyaline; veins and stigma deep brown. Ovipositor nearly as long as abdomen; sheaths piceous.

Described from four specimens (3 ♀, 1 ♂) bred from cocoons found in connection with *Megilla maculata*.

The cocoon is of a clear reddish brown color, 4 mm. long by 2 mm. wide. Its texture is compact, except that there is considerable loose silk on the outside.

COSMOPOLITAN BUTTERFLIES.

BY SAMUEL HUBBARD SCUDDER, CAMBRIDGE, MASS.

Strictly speaking, there is no such thing as a cosmopolitan butterfly; yet there is one species, *Vanessa cardui*, which may well merit that name, since it is found in every quarter of the globe with the exception of the arctic regions, a part of South America and most of the West India islands; there are also other butterflies whose recent extension naturally leads to the inquiry, What should prevent their spreading over the entire globe, or what are the elements that enable a butterfly to gain and maintain a foothold in so many diverse regions.

Let us look for a moment at the peculiarities of distribution of this nearly cosmopolitan butterfly. It belongs to a subdivision of the genus *Vanessa*, the members of which (with the sole exception of this cosmopolitan species) are found exclusively in the New World; while the antithetical section (with the single exception again of one member found both in Europe and the United States) is exclusively confined to the Old World. Judging from this fact we

may venture to assert with considerable confidence that this cosmopolitan butterfly originated in America. *Yet it is just on this continent that its distribution is most limited!* It is known in only a comparatively small portion of South America and occurs on none of the West India islands, with the exception of Cuba, where it is rare. The cause of this limitation cannot be attributed to the food plant of the caterpillar; for the thistles upon which it lives are quite as abundant in these regions as in many others which it has invaded, certainly sufficiently abundant for all its uses. Nor can the heat of the tropics be placed as a difficulty in the way, since there is no place where it flourishes more abundantly than in the tropics and subtropics of the Old World, repeated invasions of Europe by hordes from the south where they had outgrown their opportunities being already on record.

Assuming, then, America to have been its original home, it would seem